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ABSTRACT

This paper describes two experiments in which first, 10, then 20 first-grade students were taught the geographic concept of location through organized lessons and then were able to transfer their learning to concentric area questions with understanding. This study applies Vygotsky's and Gagne's theories that children can learn, recall, and apply signs and symbols. The study suggests that newer theories of psychology might be applied to empower teachers to teach children to learn place names and use them to reason spatially in ways children rarely do without instruction. (EH)

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Teaching Location Develops "Readiness" in Geography

Gary R. McKenzie

There has been a tradition in elementary social studies that young children are not mentally ready to learn and reason with geographic information, and a related tendency to postpone instruction in such academic information until after children reach a certain "natural" developmental stage of readiness. Geography readiness is defined in some child centered circles as the age when the child can explain how it is possible to live in a city a state and a nation at the same time, which Jahoda (1963) placed at about fourth grade.

In psychology, where the readiness idea developed, genetic stage development theories have been replaced by more optimistic theories that children can learn new information and ideas within a "zone of proximal development" from verbal modeling. Psychology changed, but elementary social studies curriculum useage still lags behind in old stage expectations (Atwood, 1986) which question teacher efficacy and children's abilities, and stage theory still leads to neglect of geography in primary grades (State Board of Education, 1994).

The purpose of this paper is to encourage curriculum practice to align with more optomistic mainstream modern psychology by first explaining how the theories originated and changed, and then by testing the hypothesis that teachers can teach simple information to first grade pupils in classroom settings and that children can use

the newly learned information to solve stage four class inclusion problems that Jahoda says uninstructed children cannot solve until fourth grade. If the new psychology is correct and does apply in classrooms, teachers can teach name-map location symbols to help children understand discourse and think more like educated people.

Origin of the Stage Thesis in Curriculum

The belief that young children could not understand or think logically with information and ideas in geography became official in Hall's child study and social Darwinist genetic developmental stage theory. Hall (1904) built on Darwin to propose that children's minds literally evolve genetically through the "simian" and "savage" stages of ability, as the race evolved, before adolescents can understand and think with ideas. Hall led the defeat of the Committee of Ten proposal for an equal curriculum (including geography)for all studients in 1893 and became the "undisputed leader of the child centered branch of progressives(Kliebard,1987). Hall advocated replacing disciplines with developmental activities to socialize children into good citizens, and eventually social studies was created to do so (Kliebard, 1987). Expectations were lowered to correspond to stage theory deductions from 1917 on.

The provision that insulated Hall's theory from correction through better research was Hall's two pronged claim that anything young children learned from instruction would necessarily be learned by rote, and that rote learning would interfere with, retard or arrest the natural brain evolving process inherent in activities. That tradition not only dismissed all research on learning from

instruction as "rote," it also made learned knowledge a barrier to rather than a tool of thinking.

Piaget, a zoologist originally, used Hall's assumptions and questionnaire method to study the different rates with which particular children evolved through Hall's stages. In 1951, Piaget and Weil described development of uninstructed children's understanding of homeland and other countries, and found young children did not understand place names can describe concentric areas that all include a common point.

In 1963, while psychologists and content specialists in the US were proposing to teach disciplines, Jahoda built a study of Scottish children's spatial understanding from Piaget's beginning. Jahoda asked Glasgow children questions about how they could live in Glasgow, Scotland and Great Britain at the same time, and classified answers into four levels based on ability to explain where they lived, which he then called "Geographic Stages". When the Great Society Congress canceled the post Sputnik curriculum improvement grants, elementary social studies specialists chose to follow the conservative application of stage theory in schools, and Jahoda's "geographic stages" began to be used as a test of readiness. Indeed McCartin (1969) and Dueck (1974) extended stage theory applications from Piagetian tests of children's spatial reasoning to an even more restrictive claim that children should not be instructed even in landmarks of local geography until they can spontaneously draw maps that demonstrate they already know neighborhood landmarks and pathways. The restrictive stage theory interpretation of

developmental readiness persisted in social studies curriculum at least into the mid 1980s (Atwood, 1986).

In the early 1980s educational theories were criticized for lowering expectations of children, neglecting to teach information and ideas, inhibiting teachers with ineffective process methods and then stagnating in what was called a dismal swamp. (Smeltzer et al., 1980; Chaney, 1986; Hirsch, 1987). Discredited, educational theorists were excluded from the curriculum reforms of the 1980s. Ironically, the collaborative committees of policy makers, school administrators, teachers and lobbyists who guided elementary curriculum reforms in the 1980s and 1990s used stage theory to justify policies that lowered expectations and narrowed curriculum even more (State Board of Education, 1994).

Out of the Dismal Swamp

Actually psychological theory changed very dramatically since the days when Hall used his genetic stages to discourage teaching academic subjects. In fact, modern theories no longer support the use of stages to postpone instruction in information and ideas and actually encourage teaching ideas Hall proposed to withhold. Both developmental and learning theories support teaching various kinds of knowledge of the sort geographers value and use...location facts, site descriptions, distribution patterns, and interactions.

Although Piaget began with Hall's assumptions and methods, his more careful research showed that the stages were not unitary; a given child typically reasoned on several stage levels at the same age, depending on how much the child knew about the topic. In the

1950s, Piaget replaced Hall's genetic theory of development with a very different cognitive theory that children "assimilate" (learn) information from the environment into mental structures, become dissatisfied with simplistic pre operational structures and then change or "accommodate" the way they reason to use ideas. Unlike Hall's genetic stage theory, Piaget's cognitive model admitted the possibility that children might learn information and think with it. Hunt's (1961) analysis of genetic and Piagetian research raised the "American Question" of whether early instruction could accelerate the assimilation and accommodation process Piaget described, and thus accelerate stage development and improve education, especially for deprived and low income children.

The American question shifted interest of optimistic Americans to the work Soviet scholar Lev Vygotsky, who attributed gains in thought to scially learned language and ideas (1962). Vygotsky said teachers can instruct children in verbal signs, symbols and rules they do not know within a "zone of proximal development", then provide modeling and practice to add understanding as the rule is internalized from social speech to internal thought of the child.

At the Woods Hole Conference (Bruner, 1960) American cognitive learning theorists like Bruner (1960), Ausubel (1961), and Gagne (1965; 1985) agreed that children can and do learn different kinds of information and ideas from instruction, that knowledge is are assimilated into mental schema and recalled and used to enable comprehension and rational problem solving in a cumulative way. During the 1960s and 1970s, the resulting line of cognitive learning

research produced information processing psychology which, in turn, expanded into schema theory that is now used to explain reading comprehension and instructional design efforts to build knowledge structures into ideas to enable formal problem solving.

During the 1970s, the new theories and instructional research (like that sited by Rice and Bacon in geography in 1978) persuaded developmental researchers that stage theory underestimated what young children can learn from instruction (Di Vesta, 1982). Since then developmental researchers have shifted to a social cognitive theory more like Vygotsky's. By 1994, Parke et al.'s history of developmental psychology, commissioned and published by the American Psychological Association, observed that although their founders were stage theorists, modern developmentalists "show little interest in strong forms of stage theory."

Now both learning and developmental psychologists agree that learned knowledge is prerequisite to comprehension and problem solving. Extending new cognitive theories to curriculum, McKenzie (1986) reasoned that teaching name-map location symbols should enable pupils to read or hear a place name in a text or question and translate the word into corresponding learned visual image of a map showing corresponding areas and spatial relations. Educated people do this when they read, "Lewis and Clark traveled up the Missouri, across the Rockies, and down the Snake and Colombia to the Pacific." and visualize a map with the rivers, or to answer Jahoda's question "How can one live in Glasgow, Scotland and Great Britain at the same time?"

If McKenzie is correct, simple ignorance of map locations might explain why young children cannot explain how they can live in three places at once. And if ignorance is the cause and learning place names is within a child's "zone of proximal development", teaching pupils name-place pairs that show the concentric areas of their city, state and nation on a map should enable them to recall the image of concentric regions and solve the Piagetian and solve Jahoda's problem class inclusion problem in an intellectually honest way.

Of course that is all just theory. The practical question is whether a teacher can teach locations to primary grade children in organized lessons (by rote or otherwise) and whether the children who learn and can recal the locations can transfer their learning to answer Jahoda's concentric areas question with understanding. The two little experiments that follow suggest that teachers can teach, that children can learn and reason. The studies are simple enough that practically any teacher can replicate them and test the hypothese for themselves.

Experiment 1

Ten low income first grade African American, three Hispanic and two Anglo pupils in an intact class were interviewed by the experimenter on Jahoda like questions. After asking pupils if they live in Austin, and in Texas and in the United States, and telling those who did not know that they do, pupils were asked to explain, "How can you live in Austin, and in Texas and also in the

United States at the same time?" As found in previous studies, none of the students could explain.

The following day, the experimenter distributed a simple outline map of North America with borders of Canada, the United States and Mexico, with Texas. and a star for Austin drawn in, and the names of each area typed in the margin. The experimenter projected the same map, showed a globe, and told pupils the globe was a model of Earth showing the water and land, said we live in a spot on a big piece of land called North America and pointed to the area and to the spot. Switching to the unlabeld outline maps on each pupil's desk, pupils were told that the different parts of the map have names, and that the purpose of the lesson was for pupils to learn and remember where each name in the marigin fits on a part of the map, so when someone says "Austin" or "Texas," they will be able to point to the right place. Pupils were told that memorizing the names would allow them to remember a picture of the map and figure out where adults are talking about when they mention Austin, Texas or Mexico.

Using the association strategy in a whole class setting (McKenzie & Sawyer, 1986) the experimenter told pupils that the trick to remembering where names go was to visualize how the first letter of each name fits the shape of the area like a jig saw puzzle piece. Then the name "Austin" was pointed out and read on an overhead projection like pupils' desk maps,and the A was highlighted in the word. Pupils were told, "Austin is the name of the city where we live, and you can remember where Austin is on the map by

imagining the A fitting onto the little Star, like a puzzle piece. (an A was drawn superimposed on the star on the overhead and then erased)". Then pupils were asked to point to where Austin is on their maps (but not to mark on the maps) as the experimenter checked or corrected each pupil. Pointing at the name, the experimenter asked, "How do you remember where Austin is?" and pupils called out some form of, "fit the A on the star." The same procedure was used to teach pupils to match each name to its corresponding area (A giant N fits from on stirrup in Baja up to Alaska, diagonally to a second stirrup in Florida and up the Atlantic coast to Maine. A C fits the nortwest, west and southwest borders of Canada, an M fits on the north border of Mexico, A U fits down the Pacific coast and up the Panhandle of Texas with an S from North Carolina to south Florida, and a T fits in the panhandle of Texas) As each pair was introduced and the mnemonic was illustrated and erased, pupils were all asked to point to that place, and to all the previous places in a cumulative review from memory. (They loved it, perhaps because it was "funny", the teacher acted enthusiastic, they got the right answers and everyone felt successful.) No direct instruction was given about how one could live in all areas at once. When all pupils were able to point to each area on command, the experimenter asked them to draw, from memory, where each letter or name fit on their maps to measure recall mastery. Twelve of the fifteen pupils demonstrated that they memorized all name-place pairs by labeling an outline map of North America, two could do so with hints.

The following day, the experimenter interviewed each pupil again, using the same procedure as on the pretest, to ask how it is possible to live in Austin, Texas and the United States at once. Of the twelve who initially learned the pairs, nine pupils confidently explained that Austin is inside Texas, and Texas is inside the United States. When asked to "Show me," they drew three concentric shapes, as Jahoda's stage 4 pupils did. The three who said they did not know were given planned prompts: "Try to remember how the A for Austin fit on the map yesterday; remember where the T for Texas fit." Two remembered and went on to answer the Jahoda question, saying Austin was inside Texas and Texas was inside the US., and were able to illustrate the relationships by drawing shapes. As expected, the pupils who did not learn to recall the paired associates in the first lesson were not able to explain, even with prompts.

Clearly, learning locations enabled pupils to use learned spatial relations to generate explanations first graders normally can not provide.

Experiment 2

The experimenter told twenty rural first graders in a single class setting that he lived in (nearby) Austin, and in Texas and in the United States, and asked them to tell the student teacher sitting with each child how one person could live in those three places at once. One pupil explained; the rest could not. The experimenter then taught the same lesson by the same procedure as in experiment one, and tested to see that all pupils could match each

of the six names to their areas. All pupils remembered and labeled all pairs. Then the experimenter asserted he could put one marble in three jars at once, and put a marble into a small jar, put the small jar into a larger jar, and both into a still larger jar. Then, without discussion, the experimenter again asked the pupils to tell their student teacher how he could live in Austin and Texas and the US. at once. Student teachers recorded children's oral answers.

Every pupil but one explained in some form that Austin is inside Texas, and Texas is inside the US. All could also sketch the concentric areas to illustrate their meaning. Clearly, being taught locations, followed by a demonstration of a problem solution by analogy, enabled a form of spatial reasoning.

Significance

This study applies Vygotsky's and Gagné's theories that children can learn, recall and apply signs and symbols, and McKenzie's (1986) deduced curriculum hypothesis that teaching location facts enables pupils to convert place names into a mental image of a map that "shows" spatial relations and enables spatial reasoning. In psychology, this study complements growing knowledge about how people use learned information in thinking. In education, it suggests that the newer theories of psychology might be applied to empower teachers to teach and children to learn place names and use them to reason spatially in ways children rarely do without instruction. If this type of study is replicated with similar content, and extended to more complex contents such as site descriptions and distribution

patterns, the studies may correct traditional and embarrassing assumptions in elementary social studies. Such studies would suggest in very concrete, understandable form that children need instruction in content in order to visualize and comprehend places, concepts and relations stated either in speech or in text. That is not all there is to becomming the kind of citizen Jefferson trusted to rule themselves wisely, but it a good start for primary grade children.

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